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特許協力条約に基づいて公開された国際出願

<p>(51) 国際特許分類 H01L 21/3213, 21/3065, 21/336, 29/78</p>	<p>A1</p>	<p>(11) 国際公開番号 WO00/68987 (43) 国際公開日 2000年11月16日(16.11.00)</p>
<p>(21) 国際出願番号 PCT/JP00/02914 (22) 国際出願日 2000年5月2日(02.05.00) (30) 優先権データ 特願平11/127688 1999年5月7日(07.05.99) (71) 出願人 (米国を除くすべての指定国について) アプライド マテリアルズ インコーポレイテッド (APPLIED MATERIALS INC.)(US/US) 95054 カリフォルニア サンタ クララ パウアーズアベニュー 3050 California, (US) ソニー株式会社(SONY CORPORATION)(JP/JP) 〒141-0001 東京都品川区北品川六丁目7番35号 Tokyo, (JP) (72) 発明者; および (75) 発明者/出願人 (米国についてののみ) 民谷直幹(TAMITANI, Naoki)(JP/JP) 小暮里英(KOGURE, Ryo)(JP/JP) 高岡裕二(TAKAOKA, Yuzi)(JP/JP) 〒141-0001 東京都品川区北品川六丁目7番35号 ソニー株式会社内 Tokyo, (JP)</p>	<p>朴 世烈(PARK, Seayoul)(KR/JP) 高倉 靖(TAKAKURA, Yasushi)(JP/JP) 山内英敏(YAMAUCHI, Hideoyuki)(JP/JP) 〒286-8516 千葉県成田市新泉14-3 アプライド マテリアルズ ジャパン株式会社内 Chiba, (JP) (74) 代理人 弁理士 長谷川芳樹, 外(HASEGAWA, Yoshiki et al.) 〒104-0061 東京都中央区銀座二丁目6番12号 大倉本館 創英国際特許法律事務所 Tokyo, (JP) (81) 指定国 KR, US 添付公開書類 国際調査報告書</p>	
<p>(54) Title: SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE (54) 発明の名称 半導体装置及び半導体装置の製造方法</p> <div data-bbox="477 1283 1062 1604"> </div> <p>(57) Abstract A method of manufacturing a semiconductor device having a control electrode is provided in which the control electrode is metalized while reducing the damage and deterioration of gate oxide on the control electrode. In this method, a metal interconnect (24) in predetermined patterns is formed so that it can be electrically connected to a control electrode (8a) on an insulating layer (10) formed on a substrate (2). The method comprises the steps of forming metal film; forming a hard mask (22) of silicon-base inorganic insulator on the metal film, the hard mask being 150 nm to 300 nm thick and having a predetermined pattern; and etching the metal film with an etching gas using the hard mask (22) to form a metal interconnect (24) in a predetermined pattern. According to the method, the remaining charge on the metal film is reduced, thus preventing the damage and deterioration of the insulation layer due to the charge flowing into the control electrode. More preferably, the thickness of the hard mask (22) is from 180 nm to 230 nm.</p>		

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP00/02914

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.<sup>7</sup> H01L21/3213, H01L21/3065, H01L21/336, H01L29/78

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl.<sup>7</sup> H01L21/3213, H01L21/3065, H01L21/336, H01L29/78

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2000
Kokai Jitsuyo Shinan Koho	1971-2000	Jitsuyo Shinan Toroku Koho	1996-2000

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 7-78829, A (Fujitsu Limited), 20 March, 1995 (20.03.95), Par. Nos. [0129]-[0135]; Fig. 10 Par. Nos. [0094] to [0105]; Fig. 7 Par. Nos. [0176] to [0182]	1-7, 10-20
Y	Par. Nos. [0129]-[0135]; Fig. 10 Par. Nos. [0094] to [0105]; Fig. 7 Par. Nos. [0176] to [0182] (Family: none)	8, 9
Y	JP, 11-121615, A (Sony Corporation), 30 April, 1999 (30.04.99), Par. Nos. [0027]-[0054]; Fig. 1 (Family: none)	4, 8, 9

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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- "&" document member of the same patent family

Date of the actual completion of the international search  
26 July, 2000 (26.07.00)Date of mailing of the international search report  
08 August, 2000 (08.08.00)Name and mailing address of the ISA/  
Japanese Patent Office

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